UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB2001-0234-FEC

January 14, 2002

Mr. Fred P. Patron
Senior Transportation Planning Engineer
Federal Highway Administration, Oregon Division
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation, Hult Road to Hillock Burn Road Project, Clackamas County, Oregon

Dear Mr. Patron:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) for the Hult Road to Hillock Burn Road Project, east of Colton, Oregon. NMFS concludes in this Opinion that the proposed action is not likely to jeopardize Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*), Upper Willamette River (UWR) steelhead, and UWR chinook salmon (*O. tshawytscha*) or destroy or adversely modify designated critical habitat. Pursuant to section 7 of the ESA, NMFS has included reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are necessary and appropriate to minimize the potential for incidental take associated with this project. This Opinion also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR Part 600).

Questions regarding this letter should be directed to Art Martin of my staff in the Oregon Habitat Branch at 503.231.6848.

Sincerely,

F.r Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Rose Owens, ODOT
Greg Robart, ODFW
Ray Bosch, USFWS

Endangered Species Act
Section 7 Consultation
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL OPINION

Hult Road to Hillock Burn Road Project
Clackamas County, Oregon

Agency:	Federal Highway Administration
Consultation Conducted by:	National Marine Fisheries Service, Northwest Region
Date Issued:	January 14, 2002
Issued by:	For Michael R Course D. Robert Lohn Regional Administrator
Refer to:	OSB2001-0234-FEC

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1. ENDANGERED SPECIES ACT

1.1 Background

On September 13, 2001, the National Marine Fisheries Service (NMFS) received a letter from the Federal Highway Administration (FHWA) requesting formal consultation pursuant to the Endangered Species Act (ESA) and essential fish habitat consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for funding of the Oregon Department of Transportation (ODOT) to implement the subject action. This consultation is undertaken pursuant to section 7(a)(2) of the ESA and its implementing regulations (50 CFR Part 402), and pursuant to section 305(b) of the MSA and its implementing regulations (50 CFR Part 600).

The purpose of the proposed action is to preserve the integrity of Highway 211 between Hult Road, mile post 20.89, and Hillock Burn Road, mile post 28.75. This is necessary to maintain the highway infrastructure, enhance safety features for the traveling public and keep the road open to traffic. Highway 211 provides the primary means of road access to area residents, communities and through truck traffic.

This Opinion considers the potential effects of the proposed action on Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*) and Upper Willamette River (UWR) steelhead, and UWR chinook salmon (*O. tshawytscha*) which occur in the proposed project area. LCR steelhead were listed as threatened on March 19, 1998 (63 FR 13347), critical habitat designated on February 16, 2000 (65 FR 7764) and protective regulations issued on July 10, 2000 (65 FR 42422). UWR steelhead were listed as threatened on March 25, 1999, critical habitat was designated on February 16, 2000 (65 FR 7764) and protective regulations issued on July 10, 2000 (65 FR 42422). UWR chinook salmon were listed as threatened on March 24, 1999 (64 FR 14308), critical habitat designated on February 16, 2000 (65 FR 7764) and protective regulations issued on July 10, 2000 (65 FR 42422). The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of LCR steelhead, UWR steelhead UWR, chinook salmon, or destroy or adversely modify designated critical habitat for these species. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

1.2 Proposed Action

The FHWA proposes to fund repavement of 7.9 miles (12.7 km) of existing roadway surface by ODOT. Removal of headwalls and curbs and replacement with guardrail will improve safety at various bridges and box culverts along this roadway segment. Sliver fills and 'F' type permeable asphalt extensions will be required at each of the new guardrail flares. Additional work will include: (1) A total of 25 cross-drainage and fish passage bridges and culverts will be replaced or retrofitted, (2) a replacement riprap embankment at the Little Cedar Creek culvert (mile post 27.51), and (3) various drainage facility upgrades.

1.2.1 Crossings in the Molalla River Basin

The ODOT proposes to grind out the existing asphalt and replace new asphalt at the Canyon Creek bridge crossing (mile post 21.5). New asphalt will be sloped at 2% to redirect stormwater runoff into upgraded roadside ditch facilities designed to limit sediment transport and enhance opportunity for filtration, infiltration, and capture of sanding gravels prior to discharge into Canyon Creek. Other work will include repair of deck joints, guardrail replacement, and replacement of a segment of concrete rail.

Ten cross-drainage culverts will be replaced with like size or larger culverts or retrofitted with plastic sleeves as appropriate. Four, .6 - .9 meter diameter, cross culverts conveying intermittent stream drainages with potential seasonal fish habitat will be replaced with embedded 1.2 x1.5 meter or 1.2 x1.8 meter arched pipes to facilitate fish passage. At the Milk Creek bridge crossing (mile post 21.73), the culvert headwall will be replaced with guardrail and a fish passage retrofit consisting of bolt-in, steel baffles or weirs will be installed. Scaffolding may be necessary in the flowing water to facilitate headwall removal and contain construction contaminants and debris.

1.2.2 Crossings in the Clackamas River Basin

The ODOT proposes to place guardrail along the Clear Creek bridge (mile post 27.33) approaches to improve motorist safety. Existing headwalls will be removed at both Little Cedar Creek box culverts (mile post 27.51 and 27.69) and replaced with guardrail. Placement of guardrail will entail concrete work. Scaffolding may be necessary in the flowing water to facilitate headwall removal, concrete work, and contain construction contaminants and debris. Five additional cross-drainage culverts will be replaced with like size or larger culverts or retrofitted with plastic sleeves as appropriate.

1.2.3 Little Cedar Creek Culvert Embankment Repair

The existing road embankment at the south-west side of the Little Cedar Creek culvert (mile post 27.51) has scoured away and will be repaired. Replacement of the riprap embankment will include design features to enhance fish habitat and fish passage at the culvert outlet. Design features include incorporation of complex large woody debris in the form of logs with root balls attached, irregular rock toe, and cutting of a series of notches in the existing bed rock to enhance salmonid rearing and migration habitat as detailed in Sheet 2B-7 of the preliminary plans. The replacement toe of slope will encroach 1.3 meter below the 2-year flood elevation into the creek channel. An ODOT maintenance crew will install bolt-in baffles or weirs into the barrel of the culvert before, during or after the embankment replacement to complete the fish passage remediation aspect of the project.

1.3 Biological Information and Critical Habitat

1.3.1 Lower Columbia River Steelhead

Although limited data are available to assess population numbers or trends, NMFS believes that many steelhead stocks comprising the LCR steelhead Evolutionary Significant Unit (ESU) are depressed compared with past abundance. The listing status and biological information are described in Busby et al. (1996) and NMFS (1997) and final rules from the Federal Register (March 19, 1998, 63 FR 13347). Critical habitat was designated for LCR steelhead on February 16, 2000 (65 FR 7764) and protective regulations were extended under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

Critical habitat for LCR steelhead includes the Columbia River and its tributaries between the Cowlitz and Wind Rivers in Washington and the Willamette and Hood Rivers in Oregon, inclusive. Excluded are steelhead in the Upper Willamette River Basin above Willamette Falls, and steelhead from the Little and Big White Salmon Rivers in Washington. Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas—areas adjacent to a stream that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter—below longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and several dams that block access to former LCR steelhead habitat. The action area is within LCR steelhead designated critical habitat.

Adult winter steelhead in this ESU typically reenter the river systems starting in November through the end of March. Peak reentry is in January and February. The adults spawn soon after reentering. The fry emerge from April and into July, and then rear in freshwater for 1 to 3 years. The juvenile fish smolt in the spring and emigrate downstream to the Pacific Ocean from March through June during high spring flows. Summer steelhead reenter freshwater sexually immature in June and July, and require several months of maturation before spawning. The summer steelhead overwinter in freshwater until they spawn in late winter to early spring. In the LCR steelhead ESU, most spawning occurs from March through May.

No estimates of historical (pre-1960's) abundance data are available for this ESU (Busby et al. 1996). Estimates from the 1980's showed that 75% of the total run was of hatchery origin. Habitat degradation is common throughout the ESU, primarily due to urbanization and logging. The habitat degradation affects summer steelhead more than winter steelhead. Past and present hatchery practices are a major threat to the genetic integrity of steelhead in the ESU. Historically, the Clear Creek subbasin supported runs of winter steelhead. Occupancy of juvenile steelhead has been documented within the watershed, near the action area, as recently as 1995. Fish passage problems and habitat degradation due to urbanization, industrial forestry, and agricultural land use in the watershed are likely the primary causes for the decline of steelhead in the Clear Creek subbasin.

1.3.2 Upper Willamette River Steelhead

The UWR steelhead ESU occupies the Willamette River and tributaries upstream of Willamette Falls, extending to and including the Calapooia River. These major river basins containing spawning and rearing habitats comprise more than 12,000 kilometers in Oregon. Rivers that contain naturally spawning winter-run steelhead include the Tualatin, Molalla, Santiam, Calapooia, Yamhill, Rickreall, Luckiamute, and Mary's, although the origin and distribution of steelhead in these basins is being debated. Early migrating winter and summer steelhead have been introduced into the upper Willamette Basin, but those components are not part of the ESU.

Native winter steelhead within this ESU have been declining since 1971 and have exhibited large fluctuations in abundance. In general, native steelhead of the upper Willamette Basin are late-migrating winter steelhead, entering freshwater primarily in March and April. This atypical run timing appears to be an adaptation for ascending Willamette Falls, which functions as an isolating mechanism for UWR steelhead. Reproductive isolation resulting from the falls may explain the genetic distinction between steelhead from the upper Willamette Basin and those in the lower river. UWR late-migrating steelhead are ocean-maturing fish. Most return at age 4, with a small proportion returning as 5-year-olds (Busby et al. 1996).

Willamette Falls is a known migration barrier. Winter steelhead and spring chinook salmon historically occurred above the falls, whereas summer steelhead, fall chinook, and coho salmon did not. Detroit and Big Cliff dams cut off 540-kilometers of spawning and rearing habitat in the North Santiam River. In general, habitats in this ESU have become substantially simplified since the 1800s by removal of large woody debris to increase the river's navigability.

The main hatchery production of native (late-run) winter steelhead occurs in the North Fork Santiam River, where estimates of hatchery proportion in natural spawning areas range from 14% to 54% (Busby et al. 1996). More recent estimates of the percentage of naturally spawning fish attributable to hatcheries in the late 1990s are 24% in the Molalla, 17% in the North Santiam, 5% to 12% in the South Santiam, and less than 5% in the Calapooia (Chilcote 1997).

UWR steelhead are known to occupy the action area, both adult and juvenile UWR steelhead migrate throughout the Milk Creek subbasin and into the action area. Both adult and juvenile steelhead have been observed to enter tributary streams during rearing and migration for brief periods to seek refuge from mainstem flood conditions or thermal stress, among other reasons.

1.3.3 Upper Willamette River Chinook Salmon

The UWR chinook ESU includes native spring-run populations above Willamette Falls and in the Clackamas River. In the past, it included sizable numbers of spawning salmon in the Santiam River, the middle fork of the Willamette River, and the McKenzie River, and smaller numbers in the Molalla River, Calapooia River, and Albiqua Creek. Although the total number of fish returning to the Willamette has been relatively high (24,000), about 4,000 fish now spawn

naturally in the ESU, two-thirds of which originate in hatcheries. The McKenzie River supports the only remaining naturally reproducing population in the ESU (ODFW (1998b).

No direct estimate of the size of the chinook salmon runs in the Willamette River basin was made before the 1940's. McKernan and Mattson (1950) present anecdotal information that the native American fishery at the Willamette Falls may have yielded 2,000,000 lb. (908,000 kg) of salmon (454,000 fish, each weighing 20 lb. [9.08 kg]). Based on egg collections at salmon hatcheries, Mattson (1948) estimates that the spring chinook salmon run in the 1920's may have been five times the run size of 55,000 fish in 1947, or 275,000 fish. Much of the early information on salmon runs in the upper Willamette Basin comes from operation reports of state and Federal hatcheries.

Fish in this ESU are distinct from those of adjacent ESUs in life history and marine distribution. The life history of chinook salmon in the UWR ESU includes traits from both ocean and stream-type development strategies. Coded-wire-tag (CWT) recoveries show that the fish travel to the marine waters off British Columbia and Alaska. More Willamette River fish are, however, recovered in Alaskan waters than fish from the Lower Columbia River ESU. UWR chinook mature in their fourth or fifth year. Historically, 5-year-old fish dominated the spawning migration runs; recently, however, most fish have matured at age 4. The timing of the spawning migration is limited by Willamette Falls. High flows in the spring allow access to the upper Willamette River basin, whereas low flows in the summer and autumn prevents later-migrating fish from ascending the falls. The low flows may serve as an isolating mechanism, separating this ESU from others nearby.

Human activities have had enormous effects on the salmonid populations in the Willamette drainage. First, the Willamette River, once a highly braided river system, has been dramatically simplified through channelization, dredging, and other activities that have reduced rearing habitats (i.e., stream shoreline) by as much as 75%. In addition, the construction of 37-dams in the basin has blocked access to over 700-km of stream and river spawning habitat. The dams also alter the temperature regime of the Willamette River and its tributaries, affecting the timing of development of naturally spawned eggs and fry. Water quality is also affected by development and other economic activities. Agricultural and urban land uses on the valley floor, and timber harvesting in the Cascade and Coast ranges, contribute to increased erosion and sediment load in Willamette River basin streams and rivers. Finally, since at least the 1920's, the lower Willamette River has suffered municipal and industrial pollution.

Hatchery production in the basin began in the late nineteenth century. Eggs were transported throughout the basin, resulting in current populations that are relatively homogeneous genetically (although still distinct from those of surrounding ESUs). Hatchery production continues in the Willamette, with an average of 8.4-million smolts and fingerlings released each year into the main river or its tributaries between 1975 and 1994. Hatcheries are currently responsible for most production (90% of escapement) in the basin. The Clackamas River currently accounts for about 20% of the production potential in the Willamette River basin,

originating from one hatchery plus natural production areas that are primarily above the North Fork Dam. The interim escapement goal for the area above North Fork Dam is 2,900 fish (ODFW 1998c). However, the system is so heavily influenced by hatchery production that distinguishing spawners of natural stock from hatchery origin fish is difficult. Approximately 1,000 to 1,500 adults have been counted at the North Fork Dam in recent years.

Harvest on this ESU has been high, both in the ocean and in river. The total in river harvest below the falls from 1991 through 1995 averaged 33% and was much higher before then. Ocean harvest was estimated as 16% for 1982 through 1989. The Oregon department of Fish and Wildlife (1998a) says that total (marine and freshwater) harvest rates on UWR spring-run stocks were reduced considerably for the 1991 through 1993 brood years, to an average of 21%. Recent efforts to mark all hatchery spring-run chinook salmon by removal of the adipose fin and execution of selective sport and commercial fisheries in the basin, have lowered impacts to incidental hooking and tangle netting mortality only on wild fish.

Historically, UWR chinook salmon were known to occupy the action area. No known passage barriers exist to preclude adult or juvenile UWR chinook from migrating into or utilizing the action area for spawning, rearing or migration life stages. Both adult and juvenile chinook salmon have been observed to enter tributary streams during migration for brief periods to seek refuge from mainstem flood conditions or thermal stress, among other reasons.

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NMFS uses the following steps: (1) Consider the status and biological requirements of the species, (2) evaluate the relevance of the environmental baseline in the action area to the species' current status, (3) determine the effects of the proposed or continuing action on the species, (4) consider cumulative effects, and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NMFS determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the listed species or result in destruction or adverse modifications of their critical habitat. If NMFS finds that the action is likely to jeopardize the listed species or destroy critical habitat, NMFS must identify reasonable and prudent alternatives for the action.

1.4.1 Biological Requirements

The first step in the method NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the biological requirements of the species most relevant to each consultation. NMFS also considers the current status of the listed species by taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species,

NMFS starts with the determinations made in its decision to list LCR steelhead, UWR steelhead, and UWR chinook salmon for ESA protection and also considers new data available that are relevant to the determination.

The relevant biological requirements are those necessary for LCR steelhead, UWR steelhead, and UWR chinook salmon to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are habitat characteristics that function to support successful spawning, rearing and migration. The current status of the LCR steelhead, UWR steelhead, and UWR chinook salmon, based upon their risk of extinction, has not significantly improved since the species were listed and, in some cases, their status may have worsened.

1.4.2 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect affects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. For this consultation, the action area, within the LCR steelhead and UWR chinook salmon ESUs, also includes the affected streambed, bankline, adjacent riparian zone, and aquatic areas of Clear Creek (a tributary of the Clackamas River), Little Cedar Creek (a tributary of Clear Creek) and various unnamed tributaries adjacent to and within the project area downstream 1.0 mile below the Clear Creek crossing. For this consultation, the action area, within the UWR steelhead and UWR chinook salmon ESUs, also includes the affected streambed, bankline, adjacent riparian zone, and aquatic areas of Milk Creek (a tributary of the Molalla River), Canyon Creek (a tributary of Milk Creek) and various unnamed tributaries adjacent to and within the project area downstream 1.0 mile below the Milk Creek crossing.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Actions

Creeks and rivers are dynamic systems that perpetually alter their courses in response to multiple physical criteria. Roadways and other structures constructed along waterways are subject to flooding and undercutting as a result of these natural changes in the stream course. Structural

embankment hardening has been a typical means of protection for structures along waterways. Impacts to waterways from revetment installation are simplification of stream channels, alteration of hydraulic processes, and prevention of natural channel adjustments (Spence *et al*. 1996). Moreover, embankment hardening may shift the erosion point either upstream or downstream of the subject site and contribute to stream velocity acceleration. As erosive forces affect different locations and bank hardening occurs in response, the river eventually attains a continuous fixed alignment lacking habitat complexity (USACE 1977).

Fish habitats are enhanced by the diversity of habitats at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Organisms that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flow events, retain bed load materials, and reduce flow velocity.

The most desirable method of bank protection is revegetation. However, revegetation alone can seldom stabilize banks steeper than 3:1 (horizontal:vertical) or areas of high velocity (USACE 1977). Although they are biologically less desirable, fixed structures provide the most reliable means of bank stability. The use of structural measures should be a last resort. Combining structural measures (i.e., sloped riprap or mechanically stabilized earth walls), vegetation and large woody material (LWM) is preferable to a structural solution without vegetation (USACE 1977).

The parameters that can potentially be affected by the proposed construction include water quality (sediment and chemical contamination), stream hydraulics, fish passage, and stormwater effects. Direct impacts related to project activities may occur on juvenile LCR steelhead, UWR steelhead and UWR chinook salmon occupying the action area.

Sediment

Fill of embankment material and culvert replacements in the wetted channel will result in short-term releases of sediment. Fine sediment introduced into a water body can cause turbidity. An increase in turbidity can affect fish and filter-feeding macro-invertebrates downstream of the work site. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult fish (Spence *et al.* 1996, Berg and Northcote 1985).

Transportation of sediments to the creeks is also possible. Ground disturbance activities will expose and dislodge soils. Any precipitation during select periods of vulnerability may result in erosion of soils and increases in stream turbidity.

To minimize the potential for stream turbidity and direct impacts to fish, in-water work will occur during the ODFW recommended in-water work window of July 1 - August 31 or as approved by NMFS. During this window, creek flows are typically low, fish presence is reduced, and rainfall is minimal. Low flows and work area isolation where needed will allow the work to occur in the dry, thereby reducing indirect (turbidity) and direct impacts to fish. Fish presence is likely with rearing juveniles present, but no adult spawning or egg incubation occurring. The precipitation probability increases greatly after September 30, as does the potential presence of spawning adult chinook salmon.

Chemical Contamination

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, etc., which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs) which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and nontarget riparian vegetation (Spence *et al.* 1996).

Where appropriate, to minimize the potential for chemical contamination, the work area will be isolated, fish will be removed from the work isolation area and equipment will work from above the banks of the channel where possible. Herbicide use is not proposed as part of this action.

Stream Hydraulics

The replacement of the riprap embankment at the Little Cedar Creek culvert outlet represents a simplification of habitat. Simplification of the embankment may result in velocity acceleration and subsequent relocation of erosion to another site, either upstream or downstream. Simplification also reduces refugia sites for fish, which assist in predator avoidance and maintenance of position during high flow events.

The replacement of five culverts with larger embedded arch pipes will increase the ecological benefits associated with more appropriately sized stream crossing structures such as improved hydraulic characteristics at all flows, stream simulated fish passage conditions, natural passage of stream bedload and woody debris.

The NMFS expects that the proposed action will result in additional sites of erosion and fish displacement, though project design features (e.g., complex large wood, irregular boulder toe, and bedrock notches and improved stream hydraulic conditions) will provide velocity reduction, refugia and rearing habitat benefits to reduce impacts.

Space

The replacement of the riprap embankment at the Little Cedar Creek culvert outlet will encroach on the channel 1.3 meters eliminating 3 sq m of shallow water rearing habitat. However, stream encroachment has been minimized during the design process to avoid any net increase in channel encroachment beyond the road embankment as originally built.

Fish Passage

The replacement of five culverts with larger embedded arch pipes and the fish passage retrofits to the two large box culverts at the Little Cedar Creek and Milk Creek crossings will provide access for adult and juvenile salmonids to many miles of spawning and rearing habitat. These crossings were previously fish passage barriers at all or most flows for both adult and juvenile salmonids.

Stormwater Effects

The addition of guardrail at various stream crossing structures will require the addition of sliver fills and will require 1630 square meters of new asphalt in the Molalla River Basin and 691 square meters of new asphalt in the Clackamas River Basin. To avoid cumulative adverse effects from stormwater runoff as a result of new impervious surface, the ODOT will use an 'F' type permeable asphalt for these areas of new asphalt. Stormwater from existing impervious surface will continue to sheet flow into adjacent uplands and riparian areas. The proposed design will direct stormwater runoff as the result of existing impervious surface into roadside ditches designed to enhance the opportunity for filtration, infiltration and limit sediment transport from the bridge deck and approaches at the Canyon Creek bridge crossing opposed to the current direct discharge to Canyon Creek.

1.5.2 Effects on Critical Habitat

The NMFS designates critical habitats based on physical and biological features that are essential to the listed species. Essential features of designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. The proposed action area will occur within designated critical habitat for LCR steelhead, UWR steelhead and UWR chinook salmon.

The presence of culverts and other bank developments in the area affects critical habitat in the long term by restricting natural channel forming processes, altering stream hydrology, reducing riparian vegetation, increasing stream temperature, and reducing allochthonous input. In addition, Peters *et al.* (1998) found that densities of juvenile coho salmon were generally reduced at riprapped sites when compared with areas containing large woody debris or undercut banks. Where rock riprap exists, Lister *et al*. (1993) found that embankments roughened by the placement of 1.0 to 1.5 meter diameter rocks along the toe of the bank appeared to have greater

salmonid rearing densities for all species except underyearling steelhead. The proposed action includes complex large wood and boulder placement along the toe of the replacement riprap embankment to achieve the desired effect.

Short-term impacts resulting from the proposed action could occur from turbidity and debris contribution to the waterway during construction activities and storm events during construction. These effects would be largely avoided by project timing (i.e., dry season) and work area isolation as described above in *Effects of Proposed Action*.

Long-term beneficial effects resulting from improved fish passage and improved stream hydraulics will result in permanent improvements over baseline conditions.

1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

The NMFS is not aware of any specific future non-Federal activities within the action area that would cause greater impacts to listed species than presently occurs. The NMFS assumes that future private and state actions will continue at similar intensities as in recent years.

1.5.4 Inter-related and Inter-dependent Effects

Inter-related actions include actions that are part of a larger action and depend on the larger action for their justification. Other current and future actions know to occur in the vicinity of the proposed action include the utility work performed by Cascade and Colton utilities necessary to facilitate the proposed action. Potential effects from the utility relocation may include increased risk of sediment transport to the creeks and an increase in chemical contaminents to the creeks, riparian areas and aquatic areas. The utility companies have indicated that no in-water work will be necessary to complete the utility relocations.

1.6 Conclusion

After reviewing the current status of LCR steelhead, UWR steelhead and UWR chinook salmon, the environmental baseline for the action area, the effects of the proposed action, the cumulative effects, and the interrelated and interdependent effects, NMFS has determined that the Hult Road to Hillock Burn Road Project, as proposed, is not likely to jeopardize the continued existence of the LCR steelhead, UWR steelhead and UWR chinook salmon, and is not likely to destroy or adversely modify designated critical habitats for the ESUs. Project specific conservation

measures or best management practices (BMPs) designed to minimize take of listed species are described on pages 28-37 of the BA. Specific BMPs for in-water and bank work, clearing and grubbing, culvert replacement, fish passage remediation, erosion control, hazardous materials, and site-specific conservation and habitat remediation measures are included. The NMFS regards these BMPs as integral components of the Hult Road to Hillock Burn Road Project and considers them part of the proposed action. This finding is based, in part, on incorporation of these BMPs into the proposed project design and also on the following considerations: (1) The use of complex large woody debris to construct a wood-rock toe of the replacement riprap embankment, (2) increased hydraulic and ecological function at five fish passage culvert replacements, and (3) the proposed action will not appreciably reduce the functioning of the ESUs already impaired habitats, or retard the long-term progress of impaired habitats toward properly functioning condition (PFC).

1.8 Reinitiation of Consultation

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the amount or extent of incidental take is exceeded, (2) the action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this Opinion, (3) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered, or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered species and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by NMFS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering. Harass is defined by NMFS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the term and conditions of this Incidental Take Statement.

2.1 Amount or Extent of Take

The NMFS anticipates that the proposed action covered by this Opinion has more than a negligible likelihood of incidental take of juvenile LCR steelhead, UWR steelhead and UWR chinook salmon resulting from the long-term removal of potential natural rearing habitat due to the use of a replacement riprap embankment and removal and relocation of rearing juvenile LCR steelhead, UWR steelhead and UWR chinook salmon from the isolated work areas. Effects of actions such as these are quantifiable in the short term. The effects of these activities on population levels are largely unquantifiable and not expected to be measurable in the long term.

Therefore, NMFS expects lethal and non-lethal incidental take to occur due to the action covered by this Opinion. The best scientific and commercial data available are sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. NMFS designates the expected level of non-lethal take of LCR steelhead, UWR steelhead and UWR chinook salmon not to exceed 200 individuals (i.e., total number of individuals handled during work isolation activities). NMFS designates the expected level of lethal take of LCR steelhead, UWR steelhead and UWR chinook salmon not to exceed 10 individuals. NMFS limits the area of allowable incidental take during construction to the defined action area, or distance from the action site downstream for a distance of 1.0 mile. Incidental take occurring beyond these areas is not authorized by this consultation.

2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to require the ODOT to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species. The FHWA shall:

1. Minimize the likelihood of incidental take from erosion control activities requiring streambank and shoreline protection by directing the contractor to use an approach to maximize ecological functions and the best available bioengineering technology.

2. Minimize the likelihood of incidental take from activities involving temporary access roads, use of heavy equipment, earthwork, site restoration, or that may otherwise involve in-water work or affect fish passage by directing the contractor to avoid or minimize disturbance to riparian and aquatic systems.

3. Minimize the likelihood of incidental take from in-water work activities by ensuring that the in-water work areas (culvert replacements and installation of the replacement riprap embankment) are isolated from flowing water.

4. Ensure this biological opinion is meeting its objective of minimizing the likelihood of take from permitted activities by requiring comprehensive monitoring and reporting.

2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To Implement Reasonable and Prudent Measure #1 (streambank protection) above, the FHWA shall ensure that:
   a. The use of rock and riprap is avoided or minimized.
      i. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption. No end dumping will be allowed.
   b. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site or be replaced with a functional equivalent.
   c. Wood placement will only include complex large wood to provide functional refugia habitat for fish (e.g. root wads will not be trimmed).
   d. Where feasible, the bankline will be revegetated using natural vegetation.

2. To implement Reasonable and Prudent Measure #2 (construction) above, the FHWA shall ensure that:
   a. Project design. Alteration or disturbance of the stream banks and existing riparian vegetation will be minimized.
   b. In-water work. All work within the active channel will be completed within the following in-water work periods or in-water work period variances (July 15 - August 31, July 15 - September 30, June 1 - October 31, or May 1 - November 30) for each site as recommended by ODFW.[1] Extensions of the in-water work period must be approved by NMFS.
   c. Pollution and erosion control plan. A Pollution and Erosion Control Plan (PECP) will be developed for the project to prevent point-source pollution related to construction operations. The PECP will contain the pertinent elements listed below and meet requirements of all applicable laws and regulations:

[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish)(http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

i. Methods that will be used to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations and staging areas.

ii. A description of the hazardous products or materials that will be used, including inventory, storage, handling, and monitoring.

iii. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment.

iv. Measures that will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.

d. Pre-construction activities. Prior to significant alteration of the action area, the following actions will be accomplished.

i. Boundaries of the clearing limits associated with site access and construction are flagged to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. A supply of erosion control materials (e.g., silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.

iii. All temporary erosion controls (e.g., straw bales, silt fences) are in-place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in-place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. Earthwork. Earthwork, including drilling, blasting, excavation, dredging, filling and compacting, is completed in the following manner:

i. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area.

ii. Material removed during excavation will only be placed in locations where it cannot enter streams or other water bodies.

iii. All exposed or disturbed areas will be stabilized to prevent erosion.

(1) Areas of bare soil within 150 feet of waterways, wetlands or other sensitive areas will be stabilized by native seeding,[2] mulching, and placement of erosion control blankets and mats, if applicable,

[2] By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

quickly as reasonable after exposure, but within 7 days of exposure.

(2) All other areas will be stabilized as quickly as reasonable, but within 14 days of exposure.

(3) Seeding outside of the growing season will not be considered adequate for permanent stabilization.

f. Heavy Equipment. Heavy equipment use will be fueled, maintained and stored as follows.

i. Vehicle staging, maintenance, refueling, and fuel storage areas will be a minimum of 150 feet horizontal distance from any stream.

ii. All vehicles operated within 150 feet of any stream or water body will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.

iii. When not in use, vehicles will be stored in the vehicle staging area.

g. Site restoration. Site restoration and clean-up, including protection of bare earth by seeding, planting, mulching and fertilizing, is done in the following manner.

i. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is located, and will comprise a diverse assemblage of woody and herbaceous species.

ii. No herbicide application will occur as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

iii. No surface application of fertilizer will be used within 50 feet of any stream channel as part of this permitted action.

iv. Plantings will achieve an 80 percent survival success after three years.

(1) If success standard has not been achieved after 3 years, the applicant will submit an alternative plan to NMFS. The alternative plan will address temporal loss of function.

(2) Plant establishment monitoring will continue and plans will be submitted to the NMFS until site restoration success has been achieved.

3. To implement Reasonable and Prudent Measure #3 (isolation of in-water work area) the FHWA shall ensure that during culvert replacements and instillation of the replacement riprap embankment, the work area is well isolated from the active flowing stream within a coffer dam (made out of sandbags, sheet pilings, inflatable bags, turbidity curtain or etc.), or similar structure, to facilitate fish removal and relocation and minimize the potential for sediment entrainment.

a. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:

i. Before and intermittently during pumping, attempts will be made to seine and release fish from the work isolation area as is prudent to minimize risk of injury.

ii. Seining will be conducted by, or under the supervision of a fishery biologist experienced in such efforts. Staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

iii. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever appropriate, to prevent the added stress of an out-of-water transfer.

iv. Seined fish must be released as near as possible to capture sites.

v. The FHWA shall ensure that the transfer of any ESA-listed fish to third parties other than NMFS personnel requires approval from the NMFS.

vi. The FHWA shall ensure that any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities will be obtained prior to project seining activity.

vii. The FHWA must allow the NMFS or its designated representative to accompany field personnel during the seining activity, and allow such representative to inspect the seining records and facilities.

viii. A description of any seine and release effort will be included in a post project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

b. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NMFS 1998):

i. Electrofishing may not occur near listed adults in spawning condition or near redds containing eggs.

ii. Equipment must be in good working condition. Operators must go through the manufacturer's preseason checks, follow all provisions, and record major maintenance work in a log.

iii. A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader’s experience must be documented and available for confirmation; such documentation may be a logbook. The training must occur before an inexperienced crew begins any electrofishing; it must also be conducted in waters that do not contain listed fish.

iv. Measure conductivity and set voltage as follows:

v.

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

vi. Direct current (DC) must be used at all times.

vii. Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. In general, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

viii. The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

ix. The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

x. Crew members must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

xi. Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

xii. The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, with observations on fish condition, will improve technique and form the basis for training new operators.

4. To implement Reasonable and Prudent Measure #4 (monitoring and reporting), above, the FHWA shall ensure that:

a. Within 120 days of completing the project, the FHWA shall ensure submittal of a monitoring report to NMFS describing the FHWA's success meeting their permit conditions. This report will consist of the following information.

i. Project identification.

(1) Project name;

(2) starting and ending dates of work completed for this project; and

(3) the FHWA contact person.

(4) monitoring reports shall be submitted to:

National Marine Fisheries Service
Oregon Habitat Branch, Habitat Conservation Division
Attn: OSB2001-0234
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

b. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the National Marine Fishery Service Law Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360/418-4246. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the Essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable

fishery and the managed species' contribution to a healthy ecosystem; and ``spawning, breeding, feeding, or growth to maturity'' covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH.
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Actions

The proposed action is detailed above in section 1.2 of this document. The action area includes a reach of Clear Creek, Little Cedar Creek, Milk Creek, Canyon Creek and various unnamed tributaries of these creeks adjacent or within the project area downstream 1.0 mile of the Clear Creek and Milk Creek crossings. This area has been designated as EFH for various life stages of chinook salmon and coho salmon.

3.5 Effects of Proposed Action

As described in detail in section 1.5 of this document, the proposed activities may result in detrimental short- and long-term adverse effects to a variety of habitat parameters. These impacts include: water quality (sediment and chemical contamination), stream hydraulics, and displacement of rearing juveniles.

Effect #1: Turbidity - Excavation and fill of the stream bank in the wetted channel during culvert replacements and instillation of the replacement riprap embankment will result in short-term releases of sediment. An increase in turbidity can impact fish and filter-feeding macro-invertebrates downstream of the work site.

Effect #2: Chemical Contamination - As with all construction activities, accidental release of fuel, oil, and other contaminants may occur.

Effect #3: Stream Hydraulics - Simplification of the embankment may result in velocity acceleration and subsequent relocation of erosion to another site, either upstream or downstream. Simplification also reduces refugia sites for fish, which assist in predator avoidance and maintenance of position during high flow events.

Effect #4: Space - The replacement of the riprap embankment will encroach on the channel 1.3 m eliminating 3 sq m of shallow water rearing habitat.

Effect #5: Fish Passage - Fish passage will be remediated at two large box culverts and at five culvert crossings on salmonid bearing tributaries with full culvert replacements within the action area.

Effect #6: Stormwater Effects - Water quality and hydraulic function will improve as a result of use of 'F' type pervious asphalt and upgrades to current roadside ditch drainage facilities at the Canyon Creek crossing.

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for Pacific salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FHWA, all of the Reasonable and Prudent Measures and the Terms and Conditions contained in sections 2.2 and

2.3 are applicable to salmon EFH. Therefore, NMFS incorporates each of those measures here as EFH recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NMFS after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NMFS, the agency must explain its reasons for not following the recommendation.

3.9 Consultation Renewal

The FHWA must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

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